Reconstruction method incorporating the object-position dependence of visibility loss in dark-field imaging

van Stevendaal, Udo ; Wang, Zhentian ; Köhler, Thomas ; Martens, Gerhard ; Stampanoni, Marco ; Roessl, Ewald

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Udo van Stevendaal (/profile/Udo.van-Stevendaal-41269); Zhentian Wang (/profile/Zhentian.Wang-88630); Thomas Köhler (/profile/notfound?author=Thomas_Köhler); Gerhard Martens (/profile/notfound?author=Gerhard_Martens); Marco Stampanoni (/profile/Marco.Stampanoni-27050); Ewald Roessl (/profile/notfound?author=Ewald_Roessl);

Author Affiliations + ()

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Abstract

Dark-field imaging has the potential to overcome limitations in computed tomography (CT) investigating relatively weakly absorbing material. However, an object-position dependence of the visibility loss in dark-field imaging is observed. This effect might be negligible for small objects, but, for acquisition geometries using fanangle apertures and field of views as those in human CT scanners, the object-position dependence of visibility loss has to be taken into consideration if the scattering structure within the object is in the range of the grating periods, i.e. micrometer. This work examines the effect of object-position dependent visibility loss in dark-field imaging experimentally, investigates its consequences and presents an algorithm which solves the corresponding reconstruction problem.

Citation

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